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5-1 Introduction

The purpose of this chapter is to provide guidelines for the preparation of Stormwater Site Plans (SSP). These plans will show the measures that will be taken during and after project construction which address erosion and sediment control and stormwater runoff. A completed SSP will be a comprehensive report for several aspects of the site. It will include certain reports that are currently required for all projects. It will replace the Water Pollution Control Plan and contractor's Temporary Water Pollution Control Plan which are described in the WSDOT *Design Manual*. It will satisfy the NPDES/Baseline General Permit requirement for a Stormwater Pollution Prevention Plan. It will satisfy the erosion control and stormwater requirements for all other permits that will be required for the project and will aid in completing HPA, Shoreline, and Corps of Engineer Permits.

This chapter only describes how to prepare an SSP. The Best Management Practice (BMP) selection and design processes are discussed in Chapters 3, 4, and 8.

Dependent upon the type of project, the SSP will include different items. Projects that involve earthwork with only a minimal addition of impervious ground cover will have to address erosion and sediment control. Projects that involve the addition of over 5,000 square feet (465 square meters) of impervious surface will also have to address stormwater runoff along with erosion and sediment control.

Complete copies of Stormwater Site Plans should be sent to the regional environmental staff and the Olympia Service Center Water Quality Unit for review. Hydraulics Section, Water Quality Unit, and Maintenance Office/Environmental Compliance Branch, will review and comment on items of the SSP pertinent to their respective areas of expertise and responsibility.

5-2 Contents of Stormwater Site Plans

The items that shall be included in all SSPs are as follows:

- A project overview.
- A Temporary Erosion and Sediment Control (TESC) Plan.
- A BMP Selection Form.
- A project specific Maintenance and Operations Schedule.
- A Vegetation Management Plan.

If the following items are developed for a project, they should also be included in the SSP:

- A Hydraulics Report.
- A Downstream Analysis Report (required when more than 5,000 ft² of impervious surface is added).
- An explanation of non-practicability.

5-2.1 Project Overview

The project overview is a general description of the project. It shall include a discussion of the location of the project and what is to be accomplished by constructing the project. A description of the existing site must be included along with a description of how the site will be altered as a result of the project. The project overview shall also include a site map which shows the right of way limits, the existing and proposed roadway, any significant structures, and drainage basins.

5-2.2 Temporary Erosion and Sediment Control Plan

A TESC Plan shall provide for the prevention, interception, and treatment of all potential silt-laden runoff that could occur during clearing, grading, construction, and site stabilization. The TESC Plan shall describe stabilization and structural practices, both of which shall be implemented to minimize erosion and the transport of sediments. TESC plans will typically be submitted with the hydraulic report as a separate but related document. The TESC Plan, in combination with the contractor's addendum to the plan, will satisfy the requirements of the NPDES/Baseline General Permit. Instructional Letter 22-51, effective 10/18/93, should be consulted for procedural requirements of the NPDES/Baseline General Permit.

TESC Plans are required for all projects that involve land disturbance during construction, but NPDES permit coverage is required for only those projects that involve five or more acres of disturbance. TESC Plans are designed by district Project Development staff, and their development should be coordinated with the design of permanent stormwater runoff BMPs since some temporary BMPs can be modified into permanent ones. Most work required by the TESC Plans should be compensated with unit bid items. Work such as ditch and channel excavation, and BMPs such as silt fences, straw bales, and erosion control blankets, can be easily defined and measured. When completed, the TESC Plans become part of the contract documents.

The Temporary Erosion and Sediment Control Plan consists of two parts: a narrative and a set of site plans. The narrative explains and justifies the erosion and sediment control elements of the plan, contains concise information on-site conditions, and includes the construction schedule. The site plans show the location of all features of the TESC Plan. These site plans do not have to be separate from the construction plan sheets, as long as the plan sheets that make up the TESC Plan, and the BMPs themselves, are clearly identified. If the construction plan sheets are utilized for the TESC Plan, there should be one official copy maintained as the TESC Plan on which any changes are documented.

The TESC Plan shall include a description of stabilization BMPs which involve protection of exposed soils, and site-specific scheduling of the implementation of the practices to minimize erosion. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.

In addition to stabilization practices, the TESC Plan shall include a description of structural BMPs to divert flows from exposed soils, store flows, filter out sediment from sheet flow, or otherwise limit runoff and discharge of pollutants from exposed areas of the site to the degree practicable.

5-2.3 Minimum Requirements for Erosion and Sediment Control

The following list constitutes minimum requirements for erosion and sediment control that must be met by a TESC Plan. In order to be compliant with the NPDES/Baseline General Permit, which has statewide application, and be consistent with the Department of Ecology *Stormwater Management Manual for the Puget Sound Basin*, some of these minimum requirements have two parts. The first part is the statewide requirement, the second part is the Puget Sound regional condition. Some of the minimum requirements apply only in the Puget Sound basin.

1. **Stabilization and Sediment Trapping:** All exposed and unworked soils shall be stabilized by suitable and timely application of BMPs. All exposed soils, including cut and fill slopes that are partially completed to grade, must be stabilized during the first available period and shall not be allowed to sit idle for long periods of time without receiving the erosion control specified in the TESC Plan. Prior to leaving the site, stormwater runoff shall pass through a sediment pond or trap, or other appropriate BMP.

Puget Sound Condition: From October 1 to April 30, no soils shall remain unstabilized for more than two days. From May 1 to September 30, no soils shall remain unstabilized for more than seven days.

2. **Delineate Clearing and Easement Limits:** Existing vegetation (trees, bushes, shrubs) should be preserved when its removal is not necessary for the construction of the project. In the field, stake vegetation and objects selected to remain, and stake clearing limits and/or areas not to be disturbed including easements, setbacks, sensitive/critical areas and their buffers, and drainage courses.
3. **Protection of Adjacent Properties:** Properties adjacent to the project area shall be protected from sediment deposition.
4. **Timing and Stabilization of Sediment Trapping Measures:** Sediment ponds and traps, filter fences, perimeter dikes, sediment barriers, and other BMPs intended to trap sediment on-site shall be constructed as a first step in grading. These BMPs shall be functional before land disturbing activities take place. Earthen structures used for sediment control such as dams, dikes, and diversions shall be stabilized as soon as possible.

Puget Sound Condition: Earthen structures shall be seeded and mulched, or otherwise stabilized, according to the timing and dates indicated in Minimum Requirement 1, Puget Sound Condition.

5. **Cut and Fill Slopes:** Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion.

6. Controlling Off-Site Erosion: Properties and water bodies downstream from the construction site shall be protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater runoff from the project site.

7. Stabilization of Temporary Conveyance Channels and Outlets: Stabilization adequate to prevent erosion of outlets and adjacent stream banks shall be provided at the outlets of all conveyance systems.

Puget Sound Condition: All temporary on-site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected velocity of flow from a 2-year, 24-hour frequency storm for the developed condition.

8. Storm Drain Inlet Protection: All storm sewer inlets utilized to discharge runoff from the construction site shall be protected so that stormwater runoff does not enter the conveyance system without first being filtered or otherwise treated to remove sediment.

9. Puget Sound Minimum Requirement — Underground Utility Construction: The construction of underground utility lines shall be subject to the following conditions:

- a. Where feasible, no more than 500 feet of trench shall be opened at one time.
- b. Where consistent with space and safety considerations, excavated material shall be placed on the uphill side of trenches.
- c. Trench dewatering devices shall discharge into a sediment trap or sediment pond.

10. Construction Access Routes: Wherever construction vehicle access routes intersect paved roads, provisions must be made to minimize the transport of sediment and mud onto the paved roads. If sediment is transported onto a road surface, the roads adjacent to the construction site shall be cleaned on a regular basis. Street washing shall be allowed only after other methods to prevent the transport or to remove the sediments are unsuccessful.

Puget Sound Condition: If sediment is transported onto a road surface, the roads shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by shoveling or sweeping and be transported to a controlled sediment disposal area.

11. Removal of Temporary BMPS: All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on-site. Disturbed soil areas resulting from removal shall be permanently stabilized.

12. Puget Sound Condition — Dewatering Construction Sites: Dewatering devices shall discharge into a sediment trap or sediment pond.

13. Maintenance: All temporary and permanent erosion control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repair shall be conducted in accordance with this manual.

5-2.4 Contractor's Addendum to TESC Plan

All pollutants other than sediment that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of stormwater. For the control of pollutants other than sediment, the contractor will be required to develop an addendum to the TESC Plan. Control of pollutants other than sediment includes, but is not limited to: management of oil, gasoline, and solvents used in the operation and maintenance of vehicles and machinery; spill control and containment measures; identification of proper wood waste fill and stockpile locations; and waste disposal methods and locations. Since the nature of the contractor's operations will not be known before the contract is awarded, it is the intent of this procedure to require the contractor to develop and implement an addendum to reflect his or her operations and supplement the TESC Plan, in order to provide comprehensive pollution control at the construction site.

If a construction site is large enough, and/or in existence for a long duration of time, it is likely that the contractor will utilize staging areas for some or all of the above-listed activities. The addendum needs to address only those activities that will be present at the construction site. A general special provision will be included in the contract to require the addendum to prevent pollution from these activities from entering stormwater.

The most economical and effective controls for pollutants generated on construction sites other than sediment are the exercise of 'good housekeeping' practices, and an awareness that pollution can be prevented by keeping potential pollutants out of contact with stormwater. This can be achieved by proper storage of materials by covering or other method of protection from the elements. BMPs C1.10 through C2.20 found in Section 8.1 should be utilized for pollutants other than sediment.

5-2.5 BMP Selection Form

Chapter 4 contains a one page form that is to be used during the selection of stormwater BMPs. This completed form must be included in the SSP. For projects that only deal with earthwork, no permanent BMPs will be selected; however, the form must still be included to show that the project was evaluated for the need of a stormwater BMP.

5-2.6 Maintenance and Operations Schedule

The SSP shall contain a description of the required maintenance for BMPs used in the project. The description shall state what type of maintenance is to be done for each BMP selected and the frequency at which the maintenance is to be performed. Chapters 7 and 8 will aid the designer in determining the proper maintenance for the specific BMP.

5-2.7 Vegetation Management Plan

Each project will require that a plan be developed addressing the management of vegetation for the site. This plan must be included in the SSP. Chapter 6 will aid the designer in selecting proper vegetation management practices for the site.

5-2.8 Hydraulic Report

For any project that deals with drainage structures, a Hydraulic Report must be submitted. The Hydraulic Report will have the same contents as Hydraulic Reports that were created prior to the implementation of this manual and should still be written as a stand alone document. When submitted as part of the SSP, the Hydraulic Report will provide the technical background and design parameters used for the design of all drainage structures. Chapter 1 of the *WSDOT Hydraulics Manual* contains a description of the material to be included in the Hydraulic Report.

When designing a stormwater BMP, it is important that an accurate description of the existing conditions and after project conditions of the drainage basins be included in the report. This will enable the project reviewers to determine the effectiveness of the stormwater facilities that were designed using the methodology described in Chapter 3. This is important because the most common cause of substandard stormwater BMPs is the improper evaluation of the site in its existing conditions.

5-2.9 Downstream Analysis Report

The downstream analysis will show what impacts, if any, a project will have on the hydraulic conveyance systems downstream of the project site. The analysis is divided into three parts that should be followed sequentially. The three parts include: review of resources, inspection of the affected area, and analysis of downstream effects.

During the review of resources, the designer will review any existing data concerning drainage of the project area. This data will commonly include area maps, floodplain maps, wetland inventories, stream surveys, habitat surveys, engineering reports concerning the entire drainage basin, inventories of known drainage problems, and previously completed downstream analyses. The district Hydraulics and Environmental Sections will be able to provide most of this information. Other sources of information include the Department of Ecology, the Department of Fish and Wildlife, and local agencies.

The next step is to inspect the project site and its downstream area. The designer will physically inspect the drainage system at the project site and downstream of it. During the inspection, the designer should investigate any problems or areas of concern that were noted during the review of resources. The designer should also identify any existing or potential capacity problems in the drainage system, any existing or potential areas where flooding may occur, any existing or potential areas of channel destruction, and any existing or potential areas of significant destruction of aquatic habitat.

The final step is to analyze the information that has been gathered in the first two parts. This is done to determine if construction of the project will create any drainage problems downstream or will make any existing problems worse. Often,

if the other minimum requirements are met, the project will not negatively impact the downstream drainage system. However, there are some situations that even when the minimum requirements are met the project will still have negative impacts. An example of this would be if the project discharged runoff into a small closed basin wetland; even though a detention pond was installed to comply with Minimum Requirement 5, the total volume of runoff draining to the wetland will increase which could cause long term damage to the habitat in the area. Whenever a situation is encountered where there will be downstream impacts resulting from the project, mitigation measures must be included in the project to correct for the impacts. During these circumstances, the designer should contact the regional Hydraulics or Environmental Section to determine the best method of mitigation.

5-2.10 Natural Wetlands

The offsite analysis requires gathering data to determine if any wetlands are hydraulically connected to the project site. Altering the land cover and natural drainage patterns may cause the addition or deletion of stormwater to surrounding wetlands. Wetland ecosystems can be highly effective managers of stormwater runoff. They can remove pollutants and also attenuate flows and recharge ground water. However, natural wetlands may not be used as pollution control facilities, in lieu of treatment BMPs, such as biofilters and wet ponds.

The following guidelines are adapted from Chapter III-5 of the SMMPSB. Please refer to the SMMPSB for expanded discussions on the topics presented.

In general there are three situations that will warrant further analysis to ensure that stormwater management and wetlands protection are achieved. The receiving body of water for highway runoff is a wetland which is less than 0.25 mile from the project boundary, (a longer distance may be appropriate if negative impacts are likely or the drainage conveyance is tight lined) and:

1. The sensitivity of the wetland necessitates additional controls beyond the minimum requirements for upland water quality and quantity control. Wetlands in Category I, II, or III (per Puget Sound Water Quality Authority guidelines) are likely to be very sensitive to changes brought on by urbanization. The additional stormwater quantity or quality controls will be incorporated within the project boundary or in an upland area offsite prior to discharge to the receiving wetland.
2. The receiving wetland needs significant restoration or enhancement. The wetland has been previously disturbed by human activity, as evidenced by agriculture, fill, ditching, and/or introduced or invasive weedy plant species. Other characteristics of a candidate wetland include: monotypic vegetation of similar age and class, lack of special habitat features, isolated from other aquatic systems, has been drained, or has experienced a lengthened summer dry period. These characteristics are common to Category IV wetlands. Upgrading of wetland functions can be accomplished along with benefiting runoff quality and quantity control. The controls may be applied in the upland, buffer, or in the wetland. An exemption will be needed if water quality treatment is not provided prior to discharge.

The incentives to provide the off-site wetland improvements are as follows:

1. The sizing of on-site controls are reduced to offset the costs for providing off-site improvements.
2. The wetland enhancement is considered for credit according to the Wetland Banking Agreement.
3. WSDOT may be mitigating wetland loss on a project by creating a wetland. Consult with the wetland design team to determine if the pretreated stormwater runoff can serve as a source of water for the created wetland.

Other site specific issues may arise related to comprehensive basin planning. Local jurisdictions and resource agencies may be trying to achieve several objectives including flood control, stream channel erosion and improved stormwater quality. This may influence the offsite analysis related to wetlands. If the above situations are applicable seek guidance from the Environmental Section in coordinating a design acceptable to resource agencies and local jurisdictions. The following four paragraphs provide guidance for data gathering and analysis.

Perform an analysis of the contributing and receiving drainage catchments to define the type and extent of runoff water quality and quantity problems associated with the project. This analysis should include a hydrologic assessment, identification of key water pollutants, and evaluation of the potential effects of hydrologic conditions and water pollutants throughout the drainage system.

Perform an analysis of the contributing drainage catchment to assess possible alternative best management practices that can be applied on-site. In addition determine if a regional treatment facility is available.

As a start for data analysis, obtain the relevant soil survey, the National Wetland Inventory, topographic, and land use maps, and the results of any local wetland inventory. The comprehensiveness and certainty of the outcome will vary with the amount and quality of information employed. Consult the Environmental Section to determine the availability of information related to wetland type, fish and wildlife inhabitants, hydrologic characteristics, and management and monitoring plans as defined by local, state, or federal jurisdictions. The permits required will vary from site to site.

Some level of monitoring will likely be specified for all projects that involve existing wetlands and stormwater, in order to ensure maintenance of water quality standards and wetland functions, values, and beneficial uses. There will be several levels of monitoring, ranging from minimal to extensive requirements. Wetland baseline monitoring before the implementation of the stormwater management project will be specified when necessary to provide a basis for comparison to assess impacts.

When wetlands receive treated stormwater there will likely be extensive analysis, design, and long term monitoring and maintenance activities to consider. Cooperative agreements with the local jurisdiction may be used to share the cost and work load involved in accomplishing both WSDOT and local basin objectives. The effort to coordinate the regulatory work should be discussed at an early stage to determine concurrence on project objectives and reduce local, state, and federal regulatory burdens.

The following additional General Wetland Protection Guidelines should be used to incorporate wetland protection into the stormwater site plan. The goal being to protect the ecological structure and functioning of wetlands that are modified to supply runoff water quantity or quality control benefits.

1. Comply with the water quality standards (Ch. 173-200 WAC and Ch. 173-201A WAC).
2. Maintain the wetland buffer to the maximum extent practicable.
3. Provide spill containment in conjunction with on-site pretreatment where there has been a history of accidents and spills or where there is a high volume of hazardous materials transported in the project area. If monitoring reveals high oil concentrations then consider an oil/water separator.
4. If the contributing catchment exhibits any of the following characteristics, then install a level of treatment in addition to Minimum Requirement 4 and 5:
 - a. More than 20 percent of the catchment area is committed to commercial, industrial, and/or multiple family residential land uses; or
 - b. The combination of all urban land uses (including single family residential) exceeds 50 percent of the catchment area; or
 - c. The concentration of total cadmium, copper, lead, or zinc in the open water of the wetland exceeds current Environmental Protection Agency criteria.

For the additional treatment consider using infiltration or wet pond methods. This can include expanding the size of control methods needed to meet minimum requirements or constructing additional control structures. The additional level of treatment provided should be comparable to that required or provided by other new and redevelopment projects in the vicinity.

5. If the wetland inlet will be modified for the stormwater management project, use a diffuse flow method, such as a spreader swale, to discharge water into the wetland in order to prevent flow channelization.
6. For stormwater discharges tributary to severely impacted wetlands, consider actions that restore the pre-disturbance hydrology.
7. For sensitive wetlands where the goal is to maintain plant communities or protect fish and wildlife habitat, consult the Olympia Service Center Biology Unit to determine the appropriate hydroperiod characteristics that should be maintained. Results from the Puget Sound Wetlands and Stormwater Management Research Program regarding Hydroperiods are included in Section 5-2.10.1.
8. Minimize the need for heavy equipment impacts on a wetland to avoid compaction. Restore and replant areas of construction disturbance according to recommendations provided by the Environmental Section. This includes removal or damage of nurse logs and snags. Avoid introduction of exotic wetland species.
9. Limit access and design for minimal maintenance. Fences should not be used.

10. To receive water quality benefits over the long-term, maintenance guidelines will need to be agreed upon by WSDOT and any jurisdiction involved in the project. Sediment removal and plant harvesting may be needed.

If additional water quality control is needed beyond that required for Minimum Requirement 4 and 5, and a wetland is downstream then there are many options still available for further water quality treatment. Water quality benefits to downstream receiving waters (lakes, streams, Puget Sound) can be gained in a wetland through one or a combination of three strategies. Assess these strategies in the order given below.

1. Select the wetland according to criteria that promote water quality improvement. The key criteria is maximizing the actual water residence time. Short-circuiting of flow from the inlet to the outlet should be avoided.
2. Engineer the drainage system at the entrance to the wetland to promote stormwater quality improvement. Reduce the inflow velocity and/or spread and redirect the inlet flow.
3. Modify the wetland (the portions with monotypic low-value vegetation such as cattails or reed canary grass) to incorporate features that promote stormwater quality improvement
 - a. Enlarge the wet pool area. A minimum wetlands area/watershed area ratio to design to is 0.01, however preferably greater than 0.025.
 - b. Deepen to increase volume, or alter depth contours to achieve a range of depths such as advised for constructed wetlands.
 - c. Raise the outlet or control the outlet rate to increase volume and residence time.
 - d. Plant dense, fine, native herbaceous plants

It is most desirable to maintain the natural drainage pattern while accommodating stormwater control and wetland protection objectives. Two circumstances may present the opportunity to choose between wetlands that will receive highway runoff: 1) substantial cut and fill activity is planned and the drainage pattern can easily be modified to direct water via surface runoff or enclosed pipes towards a wetland; 2) there is more than one wetland near or within the project limits. When more than one wetland is under consideration for enhancement, the preferred site is the wetland that most exhibits the following characteristics:

1. The wetland has been deprived of a significant amount of its water supply by draining or previous urbanization (e.g., by loss of ground water discharge), and pretreated stormwater can be used to augment the water supply.
2. The wetland allows runoff discharge at the natural location.
3. The wetland requires little construction activity for structural or hydrologic modification in order to solve the problem.
4. The wetland's existing hydrodynamic character is to experience a relatively high degree of water level fluctuation and a range of velocities (i.e., a wetland associated with substantially flowing water, rather than one in the headwaters or entirely isolated from flowing water).

5. The wetland is not the subject of a relatively high degree of public interest as a result of, for example, offering valued local open space or educational, scientific, or recreational opportunities, unless the proposed action would enhance these opportunities.
6. The wetland is threatened by potential impacts exclusive of stormwater management, and could receive greater protection if acquired for a stormwater management project than if left in existing ownership.

5-2.10.1 Wetland Hydroperiod Management

This is a concise summary of one topical area that is being covered by the Puget Sound Wetlands and Stormwater Management Research Program. It will be updated periodically as new information becomes available. A list of Research Summaries for other topical areas and a Publications List is available from King County Resource Planning.

Hydroperiod refers to the depth, frequency, duration, and pattern of wetland inundation. Research results to date have shown that hydroperiod alteration by urban runoff can have a more immediate and greater effect on the composition of vegetation and amphibian communities than reduced water quality has, at the levels of water quality experienced by wetlands in developing areas around Puget Sound. Water level fluctuation (WFL), measured as the difference between maximum depth and average base depth in a time period, was found to be a key determinant of plant and amphibian species richness, with significantly less rich communities of both resulting when average monthly WLF exceeds 20 cm.

The following specific management guidelines were developed from the research findings:

Depth limits (all wetlands, all year)

Limit post-development increase in annual maximum depth to 30 cm (for 1.01 to 100 year frequency rainfall events).

Limit post-development average monthly WLF (for each month in the year) to:
(1) an increase of 5 cm if pre-development WLF is greater than or equal to 15 cm;
or (2) a maximum of 20 cm if pre-development WLF is less than 15 cm.

Frequency and duration limits (Note: These guidelines envision a fluctuating stage over time before development that could fluctuate more, both higher and lower, after development; these greater fluctuations are called “excursions.” The guidelines set limits on the amount of the excursions and the total time, over one or more episodes, that they can occur in a given period.)

Wetlands with breeding native amphibians, (1 February-31 May):

Limit the magnitude of post-development stage excursions above or below the pre-development stage to no more than 8 cm, and limit the duration of these excursions to no more than 24 hours in any 30-day period.

All wetlands (1 February-30 September):

Limit the magnitude of post-development stage excursions above or below the pre-development stage to no more than 30 cm for any length of time.

Limit post-development stage excursions of 15-30 cm above or below the pre-development stage to a total duration of no more than 72 hours in any 30-day period.

Limit post-development increase or decrease in dry period (when pools dry down to the soil surface everywhere in the wetland) to 2 weeks in any year in wetlands with pre-development dry periods averaging greater than 8 weeks.

Peat wetlands (bogs and fens):

Limit post-development stage excursions above the pre-development stage to a total duration of 24 hours in any year.

Forested wetlands and zones (wetlands or zones with at least 30 percent cover of trees at least 20 ft tall):

Limit the magnitude of post-development stage excursions above the pre-development stage to no more than 20 cm, and limit the duration of these excursions to no more than 48 hours in any 7-day period during the early growing season (1 March-31 May) and to 96 hours total over the full growing season (1 March-31 August).

Avoid sediment accumulation of more than 20 cm in any year.

Sedge meadows (wetlands or zones with at least 20 percent cover by *Carex*, *Eleocharis*, *Scirpus*, or *Dilichium*):

Avoid sediment accumulation of more than 15 cm in any year.

5-2.11 Explanation of Nonpracticability

For some projects, it will be physically or economically not practicable to include stormwater BMPs. If the designer feels that this is the case for a specific project, a document must be prepared which states why, in the designers judgment, a prescriptive treatment should be considered nonpracticable. This document should yield a strong argument that supports the decision to not fully treat the stormwater runoff. The document will be reviewed by the Hydraulics and Environmental Sections and any agencies that will be issuing permits for the project. Poor planning is not a valid reason to allow release of untreated stormwater from a site.

This document should also discuss the stormwater treatment measures that will be used in the project even though they will be less than required. Every project site will have the ability to provide some amount of stormwater treatment, even if it is nothing more than the use of grassed ditches as a portion of the conveyance system.

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